

40<sup>th</sup> SMBS / 36<sup>th</sup> PEDCS / 27<sup>th</sup> RNTS / 25<sup>th</sup> SEPS Joint Subcommittee Meeting  
**ABSTRACT SUBMITTAL FORM**

**Unclassified Abstract**

*(250-300 words; do not include figures or tables)*

The Space Transportation System has used the solid rocket boosters for lift-off and ascent propulsion over the history of the program. Part of the structural loads assessment of the assembled vehicle is the contribution due to solid rocket booster thrust oscillations. These thrust oscillations are a consequence of internal motor pressure oscillations active during operation. Understanding of these pressure oscillations is key to predicting the subsequent thrust oscillations and vehicle loading. The pressure oscillation characteristics of the Reusable Solid Rocket Motor (RSRM) design are reviewed in this work. Dynamic pressure data from the static test and flight history are shown, with emphasis on amplitude, frequency, and timing of the oscillations. Physical mechanisms that cause these oscillations are described by comparing data observations to predictions made by the Solid Stability Prediction (SSP) code.